

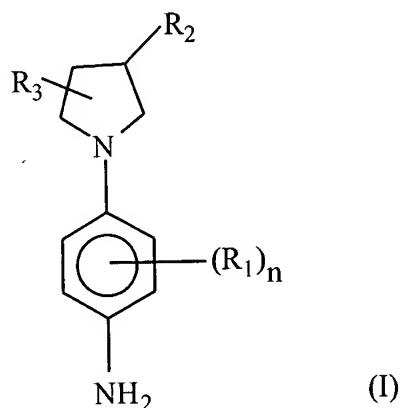
I. AMENDMENT

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-45. (Canceled)

46. (Currently amended) A dyeing composition comprising, in an appropriate dyeing medium, at least one cationic tertiary para-phenylenediamine containing a pyrrolidine ring, and at least one pearlescent or opacyfying agent chosen from coated or uncoated titanium oxides, mica-titaniums and micas, wherein said cationic tertiary paraphenylenediamine containing a pyrrolidine ring corresponds to formula I:



in which

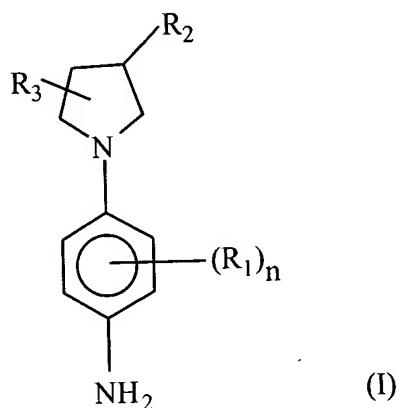
n varies from 0 to 4, it being understood that when n is greater than or equal to 2, then the radicals R₁ may be identical or different,
R₁ represents a halogen atom; a saturated or unsaturated, aliphatic or alicyclic, C₁-C₆ hydrocarbon chain, it being possible for the chain to contain one or more oxygen, nitrogen, silicon or sulphur atoms or an SO₂ group, and it being possible for the chain to be substituted with one or more hydroxyl or amino radicals; an onium radical Z, the radical R₁ not containing a peroxide bond, or diazo, nitro or nitroso radicals,

R₂ represents an onium radical Z or a radical -X-C=NR₈-NR₉R₁₀ in which X
represents an oxygen atom or a radical -NR₁₁ and R₈, R₉, R₁₀ and R₁₁
represent a hydrogen atom, a C₁-C₄ alkyl radical or a C₁-C₄ hydroxyalkyl
radical,

R₃ represents a hydrogen atom or a hydroxyl radical.

47. (Canceled)

48. (Currently amended) The composition of claim [[2]] 46, wherein the cationic tertiary



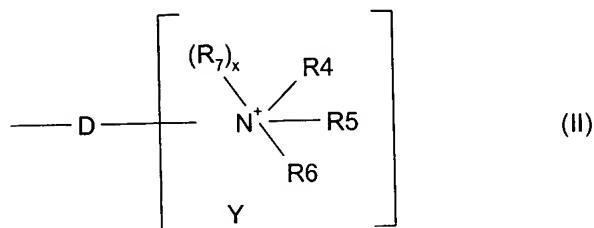
para-phenylenediamine is such that n is equal to 0.

49. (Currently amended) The composition of claim [[2]] 46, wherein the cationic tertiary para-phenylenediamine is such that n is equal to 1 and R₁ is chosen from the group consisting of a halogen atom; a saturated or unsaturated, aliphatic or alicyclic, C₁-C₆ hydrocarbon chain; it being possible for one or more carbon atoms to be replaced by an oxygen, nitrogen, silicon or sulphur atom, or by an SO₂ group, the radical R₁ not containing a peroxide bond, or diazo, nitro or nitroso radicals.

50. (Currently amended) The composition of claim [[2]] 46, wherein the cationic tertiary para-phenylenediamine is such that R₁ is chosen from chlorine, bromine, C₁-C₄ alkyl, C₁-C₄ hydroxyalkyl, C₁-C₄ aminoalkyl, C₁-C₄ alkoxy or C₁-C₄ hydroxyalkoxy radicals.

51. (Currently amended) The composition of claim [[4]] 50, wherein the cationic tertiary para-phenylenediamine is such that R₁ is chosen from a methyl, hydroxymethyl, 2-hydroxyethyl, 1,2-dihydroxyethyl, methoxy, isopropoxy or 2-hydroxyethoxy radical.

52. (Currently amended) The composition of claim [[2]] 46, wherein the cationic tertiary para-phenylenediamine is such that R₂ represents the onium radical Z corresponding to formula (II)



- a. wherein:
- b. D is a single bond of a linear or branched C₁-C₁₄ alkylene chain which may contain one or more heteroatoms chosen from oxygen, sulphur or nitrogen, and which may be substituted with one or more hydroxyl, C₁-C₆ alkoxy or amino radicals and which may carry one or more ketone functional groups;
- c. R₄, R₅ and R₆, taken separately, represent a C₁-C₁₅ alkyl radical; a C₁-C₆ monohydroxyalkyl radical; a C₂-C₆ polyhydroxyalkyl radical; a (C₁-C₆)alkoxy(C₁-C₆)alkyl radical; an aryl radical; a benzyl radical; a C₁-C₆ amidoalkyl radical; a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical; a C₁-C₆ aminoalkyl radical; a C₁-C₆ aminoalkyl radical wherein the amine is mono- or di-substituted with a C₁-C₄ alkyl, (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical; or
- d. R₄, R₅ and R₆ together, in pairs, form, with the nitrogen atom to which they are attached, a 4-, 5-, 6- or 7-membered saturated carbon ring which may contain one or more heteroatoms, it being possible for the cationic ring to be substituted with a halogen atom, a hydroxyl radical, a C₁-C₆ alkyl radical, a C₁-C₆ monohydroxyalkyl radical, a C₂-C₆ polyhydroxy-alkyl radical, a C₁-C₆ alkoxy radical, a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical, an amido radical, a carboxyl radical, a (C₁-C₆)alkylcarbonyl radical, a thio (-SH) radical, a C₁-C₆ thioalkyl (-R-SH) radical, a (C₁-C₆)alkylthio radical, an amino radical, an amino radical which is mono- or di-substituted with a (C₁-C₆)alkyl, (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical;

- e. R_7 represents a C_1 - C_6 alkyl radical; a C_1 - C_6 monohydroxyalkyl radical; a C_2 - C_6 polyhydroxyalkyl radical; an aryl radical; a benzyl radical; a C_1 - C_6 aminoalkyl radical; a C_1 - C_6 aminoalkyl radical whose amine is mono- or di-substituted with a $(C_1$ - $C_6)$ alkyl, $(C_1$ - $C_6)$ alkylcarbonyl, amido or $(C_1$ - $C_6)$ alkylsulphonyl radical; a C_1 - C_6 carboxyalkyl radical; a C_1 - C_6 carbamylalkyl radical; a C_1 - C_6 trifluoroalkyl radical; a tri(C_1 - C_6)alkylsilane(C_1 - C_6)alkyl radical; a C_1 - C_6 sulphonamidoalkyl radical; a $(C_1$ - $C_6)$ alkylcarboxy(C_1 - C_6)alkyl radical; a $(C_1$ - $C_6)$ alkylsulphanyl(C_1 - C_6)alkyl radical; a $(C_1$ - $C_6)$ alkylsulphonyl(C_1 - C_6)alkyl radical; a $(C_1$ - $C_6)$ alkylcarbonyl(C_1 - C_6)alkyl radical; an N- $(C_1$ - $C_6)$ alkylcarbamyl(C_1 - C_6)alkyl radical; an N- $(C_1$ - $C_6)$ alkylsulphonamido(C_1 - C_6)alkyl radical;
- f. x is 0 or 1,
 - i. (New) when $x = 0$, then the linking arm is attached to the nitrogen atom carrying the radicals R_4 to R_6 ;
 - ii. (New) when $x = 1$, then two of the radicals R_4 to R_6 form, together with the nitrogen atom to which they are attached, a 4-, 5-, 6- or 7-membered saturated ring and D is linked to the carbon atom of the saturated ring; and
- g. Y is a counter-ion.

53. (Currently amended) The composition of claim [[6]] 51, wherein the cationic tertiary para-phenylenediamine is such that R_2 corresponds to formula II wherein x is equal to 0 and R_4 , R_5 and R_6 separately are preferably chosen from a C_1 - C_6 alkyl radical, a C_1 - C_4 monohydroxyalkyl radical, a C_2 - C_4 polyhydroxyalkyl radical, a $(C_1$ - $C_6)$ alkoxy(C_1 - C_4)alkyl radical, a C_1 - C_6 amidoalkyl radical, a tri(C_1 - C_6)alkylsilane(C_1 - C_6)alkyl radical, or R_4 with R_5 form together an azetidine ring, a pyrrolidine, piperidine, piperazine or morpholine ring, R_6 being chosen in this case from a C_1 - C_6 alkyl radical; a C_1 - C_6 monohydroxyalkyl radical, a C_2 - C_6 polyhydroxyalkyl radical; a C_1 - C_6 aminoalkyl radical, an aminoalkyl radical which is mono- or di-substituted with a $(C_1$ - $C_6)$ alkyl radical, a $(C_1$ - $C_6)$ alkylcarbonyl, amido or $(C_1$ - $C_6)$ alkylsulphonyl radical; a C_1 - C_6 carbamylalkyl radical; a tri(C_1 - C_6)alkylsilane(C_1 - C_6)alkyl radical; a $(C_1$ - $C_6)$ alkyl carboxy(C_1 - C_6)alkyl radical; a $(C_1$ - $C_6)$ alkylcarbonyl(C_1 - C_6)alkyl radical; an N- $(C_1$ - $C_6)$ alkylcarbamyl(C_1 - C_6)alkyl radical.

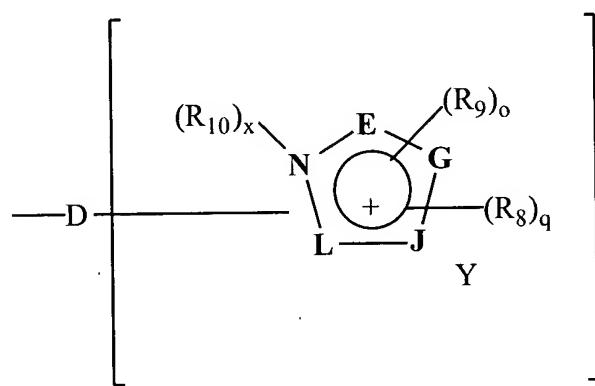
54. (Currently amended) The composition of claim [[6]] 51, wherein the cationic tertiary para-phenylenediamine is such that R_2 corresponds to formula II wherein x is equal to 1 and R_7 is chosen from a C_1 - C_6 alkyl radical; a C_1 - C_6 monohydroxyalkyl radical; a C_2 - C_6 polyhydroxy-alkyl

radical; a C₁-C₆ aminoalkyl radical, a C₁-C₆ aminoalkyl radical whose amine is mono- or di-substituted with a (C₁-C₆)alkyl, (C₁-C₆)alkylcarbonyl, amido or a (C₁-C₆)alkylsulphonyl radical; a C₁-C₆ carbamylalkyl radical, a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical; a (C₁-C₆)alkylcarboxy(C₁-C₆)alkyl radical; a (C₁-C₆)alkylcarbonyl(C₁-C₆)alkyl radical; an N-(C₁-C₆)alkylcarbamyl(C₁-C₆)alkyl radical; R₄ with R₅ together form an azetidine, pyrrolidine, piperidine, piperazine or morpholine ring, R₆ being chosen in this case from a C₁-C₆ alkyl radical; a C₁-C₆ monohydroxyalkyl radical; a C₂-C₆ polyhydroxyl alkyl radical; a C₁-C₆ aminoalkyl radical; a C₁-C₆ aminoalkyl radical whose amine is mono- or di-substituted with a (C₁-C₆)alkyl, (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical; a C₁-C₆ carbamylalkyl radical; a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical; a (C₁-C₆)alkylcarboxy(C₁-C₆)alkyl radical; a (C₁-C₆)alkylcarbonyl(C₁-C₆)alkyl radical; an N-(C₁-C₆)alkylcarbamyl(C₁-C₆)alkyl radical.

55. (Currently amended) The composition of claim [[6]] 51, wherein the cationic tertiary para-phenylenediamine is such that D is a single bond or an alkylene chain which may be substituted.

56 (Currently amended) The composition of claim [[6]] 51, wherein the cationic tertiary para-phenylenediamine is such that R₂ is a trialkylammonium radical.

57. (Currently amended) The composition of claim [[2]] 46, wherein the cationic tertiary para-phenylenediamine is such that R₂ represents the onium radical Z corresponding to formula III



(III)

- h. wherein
- i. D is a single bond or a linear or branched C₁-C₁₄ alkylene chain which may contain one or more heteroatoms chosen from oxygen, sulphur or nitrogen, and which may be substituted with one or more hydroxyl, C₁-C₆ alkoxy or amino radicals, and which may carry one or more ketone functional groups;
- j. the vertices E, G, J, L, which are identical or different, represent a carbon, oxygen, sulphur or nitrogen atom to form a pyrrole, pyrazole, imidazole, triazole, oxazole, isooxazole, thiazole, isothiazole ring;
- k. q is an integer between 0 and 4 inclusive;
- l. is an integer between 0 and 3 inclusive;
- m. q+o is an integer between 0 and 4;
- n. the radicals R₈, which are identical or different, represent a halogen atom, a hydroxyl radical, a C₁-C₆ alkyl radical, a C₁-C₆ monohydroxyalkyl radical, a C₂-C₆ polyhydroxyalkyl radical, a C₁-C₆ alkoxy radical, a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical, an amido radical, a carboxyl radical, a C₁-C₆ alkylcarbonyl radical, a thio radical, a C₁-C₆ thioalkyl radical, a (C₁-C₆)alkylthio radical, an amino radical, an amino radical which is mono- or di-substituted with a (C₁-C₆)alkyl, (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical; a C₁-C₆ monohydroxyalkyl radical or a C₂-C₆ polyhydroxyalkyl radical; it being understood that the radicals R₈ are carried by a carbon atom;
- o. the radicals R₉, which are identical or different, represent a C₁-C₆ alkyl radical, a C₁-C₆ monohydroxyalkyl radical, a C₂-C₆ polyhydroxyalkyl radical, a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical, a (C₁-C₆)alkoxy(C₁-C₆)alkyl radical, a C₁-C₆ carbamylalkyl radical, a (C₁-C₆)alkylcarboxy(C₁-C₆)alkyl radical, a benzyl radical, it being understood that the radicals R₉ are carried by a nitrogen;
- p. R₁₀ represents a C₁-C₆ alkyl radical; a C₁-C₆ monohydroxyalkyl radical; a C₂-C₆ polyhydroxyalkyl radical; an aryl radical; a benzyl radical; a C₁-C₆ aminoalkyl radical, a C₁-C₆ aminoalkyl radical whose amine is substituted with a (C₁-C₆)alkyl, (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical; a C₁-C₆ carboxyalkyl radical; a C₁-C₆ carbamylalkyl radical; a C₁-C₆ trifluoroalkyl radical; a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical; a C₁-C₆ sulphonamidoalkyl

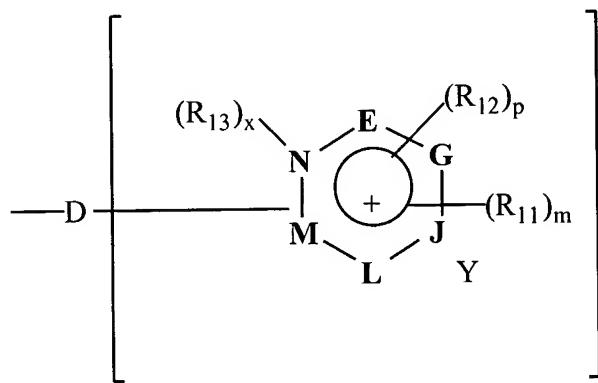
radical; a (C₁-C₆)alkylcarboxy(C₁-C₆)alkyl radical; a (C₁-C₆)alkylsulphonyl(C₁-C₆)alkyl radical; a (C₁-C₆)alkylsulphonyl(C₁-C₆)alkyl radical; a (C₁-C₆)alkylcarbonyl(C₁-C₆)alkyl radical; an N-(C₁-C₆)alkylcarbamyl(C₁-C₆)alkyl radical; an N-(C₁-C₆)alkylsulphonamido(C₁-C₆)alkyl radical;

- q. x is 0 or 1
 - i. (New) when x = 0, the linking arm D is attached to the nitrogen atom,
 - ii. (New) when x = 1, the linking arm D is attached to one of the vertices E, G, J or L; and
- r. Y is a counter-ion.

58. (Currently amended) The composition of claim [[11]] 57, wherein the cationic tertiary para-phenylenediamine is such that the vertices E, G, J and L form an imidazole ring.

59. (Currently amended) The composition of claim [[11]] 57, wherein the cationic tertiary para-phenylenediamine is such that x is equal to 0, D is a single bond or an alkylene chain which may be substituted.

60. (Currently amended) The composition of claim [[2]] 46, wherein the cationic tertiary para-phenylenediamine is such that R₂ represents an onium radical Z corresponding to formula IV



(IV)

b. wherein:

- c. D is a single bond or a linear or branched C₁-C₁₄ alkylene chain which may contain one or more heteroatoms chosen from an oxygen, sulphur or nitrogen atom, and which may be substituted with one or more hydroxyl, C₁-C₆ alkoxy or amino radicals, and which may carry one or more ketone functional groups;
- d. the vertices E, G, J, L and M, which are identical or different, represent a carbon, oxygen, sulphur or nitrogen atom to form a ring chosen from the pyridine, pyrimidine, pyrazine, triazine and pyridazine rings;
- e. p is an integer between 0 and 3 inclusive;
- f. m is an integer between 0 and 5 inclusive;
- g. p+m is an integer between 0 and 5;
- h. the radicals R₁₁, which are identical or different, represent a halogen atom, a hydroxyl radical, a C₁-C₆ alkyl radical, a C₁-C₆ monohydroxyalkyl radical, a C₂-C₆ polyhydroxyalkyl radical, a C₁-C₆ alkoxy radical, a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical, an amido radical, a carboxyl radical, a C₁-C₆ alkylcarbonyl radical, a thio radical, a C₁-C₆ thioalkyl radical, a (C₁-C₆)alkylthio radical, an amino radical, an amino radical which is substituted with a (C₁-C₆)alkyl, (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical; a C₁-C₆ monohydroxyalkyl radical or a C₂-C₆ polyhydroxyalkyl radical, it being understood that the radicals R₁₁ are carried by a carbon atom;
- i. the radicals R₁₂, which are identical or different, represent a C₁-C₆ alkyl radical, a C₁-C₆ monohydroxyalkyl radical, a C₂-C₆ polyhydroxyalkyl radical, a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical, a (C₁-C₆)alkoxy(C₁-C₆)alkyl radical, a C₁-C₆ carbamylalkyl radical, a (C₁-C₆)alkylcarboxy(C₁-C₆)alkyl radical, a benzyl radical, it being understood that the radicals R₁₂ are carried by a nitrogen;
- j. R₁₃ represents a C₁-C₆ alkyl radical; a C₁-C₆ monohydroxyalkyl radical; a C₂-C₆ polyhydroxyalkyl radical; an aryl radical; a benzyl radical; a C₁-C₆ aminoalkyl radical, a C₁-C₆ aminoalkyl radical whose amine is mono- or di-substituted with a (C₁-C₆)alkyl, (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical; a C₁-C₆ carboxyalkyl radical; a C₁-C₆ carbamylalkyl radical; a C₁-C₆ trifluoroalkyl radical; a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl

radical; a C₁-C₆ sulphonamidoalkyl radical; a (C₁-C₆)alkylcarboxy(C₁-C₆)alkyl radical; a (C₁-C₆)alkylsulphonyl(C₁-C₆)alkyl radical; a (C₁-C₆)alkylsulphonyl(C₁-C₆)alkyl radical; a (C₁-C₆)alkylcarbonyl(C₁-C₆)alkyl radical; an N-(C₁-C₆)alkylcarbamyl(C₁-C₆)alkyl radical; an N-(C₁-C₆)alkylsulphonamido(C₁-C₆)alkyl radical;

k. x is 0 or 1

- i. (New) when x = 0, the linking arm D is attached to the nitrogen atom,
- ii. (New) when x = 1, the linking arm D is attached to one of the vertices E, G, J, L or M; and

l. Y is a counter-ion.

61. (Currently amended) The composition of claim [[14]] 60, wherein the vertices E, G, J, L and M form, with the nitrogen of the ring, a ring chosen from pyridine and pyrimidine rings.

62. (Currently amended) The composition of claim [[14]] 60, wherein the cationic tertiary para-phenylenediamine is such that x is equal to 0 and R₁₁ is chosen from a hydroxyl radical, a C₁-C₆ alkyl radical, a C₁-C₆ monohydroxyalkyl radical, a C₂-C₆ polyhydroxyalkyl radical, a C₁-C₆ alkoxy radical, a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical, an amido radical, a C₁-C₆ alkylcarbonyl radical, an amino radical, an amino radical which is mono- or di-substituted with a (C₁-C₆)alkyl, a (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical; a C₁-C₆ monohydroxyalkyl radical or a C₂-C₆ polyhydroxyalkyl radical and R₁₂ is chosen from a C₁-C₆ alkyl radical, a C₁-C₆ monohydroxyalkyl radical, a C₂-C₆ polyhydroxyalkyl radical, a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical, a (C₁-C₆)alcoxy(C₁-C₆)alkyl radical, a C₁-C₆ carbamylalkyl radical.

63. (Currently amended) The composition of claim [[14]] 60, wherein the cationic tertiary para-phenylenediamine is such that x is equal to 1 and R₁₃ is chosen from a C₁-C₆ alkyl radical; a C₁-C₆ monohydroxyalkyl radical; a C₂-C₆ polyhydroxyalkyl radical; a C₁-C₆ aminoalkyl radical, a C₁-C₆ aminoalkyl radical whose amine is mono- or di-substituted with a (C₁-C₆)alkyl radical, a (C₁-C₆)alkylcarbonyl radical, an amido radical, a (C₁-C₆)alkylsulphonyl radical; a C₁-C₆ carbamylalkyl radical; a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical; a (C₁-C₆)alkylcarbonyl(C₁-C₆)alkyl radical; an N-(C₁-C₆)alkylcarbamyl(C₁-C₆)alkyl radical; R₁₁ is chosen from a hydroxyl radical, a C₁-C₆ alkyl radical, a C₁-C₆ monohydroxyalkyl radical, a C₂-C₆ polyhydroxyalkyl radical, a C₁-C₆ alkoxy

radical, a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical, an amido radical, a C₁-C₆ alkylcarbonyl radical, an amino radical, an amino radical which is mono- or di- substituted with a (C₁-C₆)alkyl, (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical; and R₁₂ is chosen from a C₁-C₆ alkyl radical, a C₁-C₆ monohydroxyalkyl radical, a C₂-C₆ polyhydroxyalkyl radical, a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical, a (C₁-C₆)alkoxy(C₁-C₆)alkyl radical, a C₁-C₆ carbamylalkyl radical.

64. (Currently amended) The composition of claim [[14]] 60, wherein the cationic tertiary para-phenylenediamine is such that R₁₁, R₁₂ and R₁₃ are alkyl radicals which may be substituted.

65. (Currently amended) The composition of claim [[2]] 46, wherein the cationic tertiary para-phenylenediamine is such that the radical R₂ is the radical of formula -XP(O)(O-)OCH₂CH₂N⁺(CH₃)₃ where X represents an oxygen atom or a radical -NR₁₄, R₁₄ representing a hydrogen, a C₁-C₄ alkyl radical or a hydroxyalkyl radical.

66. (Currently amended) The composition of claim [[2]] 46, wherein the cationic tertiary para-phenylenediamine is such that R₂ is a guanidine radical of formula -X-C=NR₈-NR₉R₁₀, X represents an oxygen atom or a radical -NR₁₁, R₈, R₉, R₁₀ and R₁₁ representing a hydrogen, a C₁-C₄ alkyl radical or a hydroxyalkyl radical.

67. (Currently amended) The composition of claim [[1]] 46, wherein the cationic tertiary para-phenylene is chosen from the group consisting of

- a. [1-(4-Aminophenyl)pyrrolidin-3-yl]trimethylammonium chloride,
- b. [1-(4-Aminophenyl)pyrrolidin-3-yl]dimethyltetradecylammonium bromide
- c. N'-[1-(4-Aminophenyl)pyrrolidin-3-yl]-N,N-dimethyl-guanidinium chloride
- d. N-[1-(4-Aminophenyl)pyrrolidin-3-yl]guanidinium chloride
- e. 3-[1-(4-Aminophenyl)pyrrolidin-3-yl]-1-methyl-3H-imidazol-1-ium chloride
- f. [1-(4-Aminophenyl)pyrrolidin-3-yl]-(2-hydroxyethyl)dimethylammonium chloride
- g. [1-(4-Aminophenyl)pyrrolidin-3-yl]dimethyl-(3-trimethylsilylpropyl)ammonium chloride

- h. [1-(4-Aminophenyl)pyrrolidin-3-yl]-(trimethylammoniumhexyl)dimethylammonium dichloride
- i. [1-(4-Aminophenyl)pyrrolidin-3-yl]oxophosphorylcholine
- j. {2-[1-(4-Aminophenyl)pyrrolidin-3-yloxy]ethyl}trimethylammonium chloride
- k. 1-{2-[1-(4-Aminophenyl)pyrrolidin-3-yloxy]ethyl}-1-methylpyrrolidinium chloride
- l. 3-{3-[1-(4-Aminophenyl)pyrrolidin-3-yloxy]propyl}-1-methyl-3H-imidazol-1-ium chloride
- m. 1-{2-[1-(4-Aminophenyl)pyrrolidin-3-yloxy]ethyl}-1-methylpiperidinium chloride
- n. 3-{3-[1-(5-trimethylsilanylethyl)-4-Amino-3-trimethylsilanylethylphenyl]pyrrolidin-3-yloxy]propyl}-1-methyl-3H-imidazol-1-um chloride
- o. [1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]trimethyammonium chloride
- p. [1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]dimethyltetradecylammonium chloride
- q. N'-[1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]-N,N-dimethylguanidinium chloride
- r. N-[1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]guanidinium chloride
- s. 3-[1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]-1-methyl-3H-imidazol-1-ium chloride
- t. [1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]-(2-hydroxyethyl)dimethylammonium chloride
- u. [1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]dimethyl-(3-trimethylsilanylpropylammonium chloride
- v. [1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]-(trimethylammoniumhexyl)dimethylammonium dichloride
- w. [1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]oxophosphorylcholine
- x. {2-[1-(4-Amino-3-methylphenyl)pyrrolidin-3-yloxy]ethyl}trimethylammonium chloride

- y. 1-{2-[1-(4-Amino-3-methylphenyl)pyrrolidin-3-yloxy]ethyl}-1-methylpyrrolidinium chloride
- z. 3-{3-[1-(4-Amino-3-methylphenyl)pyrrolidin-3-yloxy]-propyl} 1-methyl-3H-imidazol-1-ium chloride
- aa. 1-{2-[1-(4-Amino-3-methylphenyl)pyrrolidin-3-yloxy]ethyl}-1-methylpiperidinium chloride
- bb. [1-(4-Amino-3-trimethylsilanylethylphenyl)pyrrolidin-3-yl]trimethylammonium chloride
- cc. 3-[1-(4-Amino-3-trimethylsilanylethylphenyl)pyrrolidin-3-yl]-1-methyl-3H-imidazol-1-ium chloride
- dd. 3-{3-[1-(4-Amino-3-trimethylsilanylethylphenyl)pyrrolidin-3-yloxy]propyl}-1-methyl-3H-imidazol-1-ium chloride
- ee. [1-(5-trimethylsilanylethyl-4-Amino-3-trimethylsilanylethylphenyl)pyrrolidin-3-yl]trimethylammonium chloride
- ff. 3-[1-(5-trimethylsilanylethyl-4-Amino-3-trimethylsilanylethylphenyl)pyrrolidin-3-yl]-1-methyl-3H-imidazol-1-ium chloride
- gg. 1'-(4-Aminophenyl)-1-methyl-[1,3']bipyrrolidinyl-1-ium chloride
- hh. 1'-(4-Amino-3-methylphenyl)-1-methyl-[1,3']bipyrrolidinyl-1-ium chloride
- ii. 3-{[1-(4-Aminophenyl)pyrrolidin-3-ylcarbamoyl]methyl}-1-methyl-3H-imidazol-1-ium chloride
- jj. 3-{[1-(4-Amino-3-methylphenyl)pyrrolidin-3-ylcarbamoyl]methyl}-1-methyl-3H-imidazol-1-ium chloride
- kk. 3-[1-(4-Aminophenyl)pyrrolidin-3-yl]-1-(3-trimethylsilanylpropyl)-3H-imidazol-1-ium chloride
- ll. 3-[1-(4-Aminophenyl)pyrrolidin-3-yl]-1-(3-trimethylsilanylpropyl)-3H-imidazol-1-ium chloride
- mm. [1-(4-aminophenyl)pyrrolidin-3-yl]ethyldimethylammonium chloride
- nn. [1-(4-aminophenyl)pyrrolidin-3-yl]ethyldimethylammonium iodide
- oo. [1-(4-aminophenyl)pyrrolidin-3-yl]propyldimethylammonium iodide,
- pp. [1-(4-aminophenyl)pyrrolidin-3-yl]propyldimethylammonium bromide
- qq. [1-(4-aminophenyl)pyrrolidin-3-yl]propyldimethylammonium methosulphate

- rr. [1-(4-aminophenyl)pyrrolidin-3-yl]butyldimethylammonium iodide
- ss. [1-(4-aminophenyl)pyrrolidin-3-yl]pentyldimethylammonium iodide
- tt. [1-(4-aminophenyl)pyrrolidin-3-yl]hexyldimethylammonium iodide
- uu. [1-(4-aminophenyl)pyrrolidin-3-yl]heptyldimethylammonium iodide
- vv. [1-(4-Aminophenyl)pyrrolidin-3-yl]octyldimethylammonium iodide
- ww. [1-(4-aminophenyl)pyrrolidin-3-yl]decyldimethylammonium iodide
- xx. [1-(4-aminophenyl)pyrrolidin-3-yl]hexadecyldimethylammonium iodide
- yy. [1-(4-aminophenyl)pyrrolidin-3-yl]hydroxyethyldimethylammonium chloride
- zz. [1-(4-aminophenyl)pyrrolidin-3-yl]hydroxyethyldimethylammonium iodide.

68. (Currently amended) The composition of claim [[1]] 46, wherein the cationic tertiary para-phenylene is chosen from the group consisting of

- a. [1-(4-Aminophenyl)pyrrolidin-3-yl]trimethylammonium chloride;
- b. [1-(4-Aminophenyl)pyrrolidin-3-yl]dimethyltetradecylammonium bromide;
- c. N'-[1-(4-Aminophenyl)pyrrolidin-3-yl]-N,N-dimethylguanidinium chloride
- d. N-[1-(4-Aminophenyl)pyrrolidin-3-yl]guanidinium chloride
- e. 3-[1-(4-Aminophenyl)pyrrolidin-3-yl]-1-methyl-3H-imidazol-1-ium chloride;
- f. [1-(4-Aminophenyl)pyrrolidin-3-yl](2-hydroxyethyl)dimethylammonium chloride
- g. [1-(4-Aminophenyl)pyrrolidin-3-yl]dimethyl-(3-trimethylsilanylpropyl)ammonium chloride;
- h. [1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]trimethylammonium chloride
- i. [1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]dimethyltetradecylammonium chloride
- j. N'-[1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]-N,N-dimethylguanidinium chloride
- k. N-[1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]guanidinium chloride
- l. 3-[1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]-1-methyl-3H-imidazol-1-ium chloride
- m. [1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]-(2-hydroxyethyl)dimethylammonium chloride

- n. [1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]dimethyl-(3-trimethylsilanylpropylammonium chloride
- o. 1'-(4-Aminophenyl)-1-methyl-[1,3']bipyrrolidinyl-1-iium chloride
- p. 1'-(4-Amino-3-methylphenyl)-1-methyl-[1,3']bipyrrolidinyl-1-iium chloride
- q. 3-{[1-(4-Aminophenyl)pyrrolidin-3-ylcarbamoyl]methyl}-1-methyl-3H-imidazol-1-iium chloride
- r. 3-{[1-(4-Amino-3-methylphenyl)pyrrolidin-3-ylcarbamoyl]methyl}-1-methyl-3H-imidazol-1-iium chloride
- s. 3-[1-(4-Aminophenyl)pyrrolidin-3-yl]-1-(3-trimethylsilanylpropyl)-3H-imidazol-1-iium chloride
- t. 3-[1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]-1-(3-trimethylsilanyl-propyl)-3H-imidazol-1-iium chloride
- u. [1-(4-aminophenyl)pyrrolidin-3-yl]ethyldimethylammonium chloride
- v. [1-(4-aminophenyl)pyrrolidin-3-yl]ethyldimethylammonium iodide
- w. [1-(4-Aminophenyl)pyrrolidin-3-yl]propyldimethylammonium iodide,
- x. [1-(4-aminophenyl)pyrrolidin-3-yl]propyldimethylammonium bromide
- y. [1-(4-aminophenyl)pyrrolidin-3-yl]propyldimethylammonium methosulphate
- z. [1-(4-aminophenyl)pyrrolidin-3-yl]butyldimethylammonium iodide
- aa. [1-(4-aminophenyl)pyrrolidin-3-yl]pentyldimethylammonium iodide
- bb. [1-(4-aminophenyl)pyrrolidin-3-yl]hexyldimethylammonium iodide
- cc. [1-(4-aminophenyl)pyrrolidin-3-yl]heptyldimethylammonium iodide
- dd. [1-(4-aminophenyl)pyrrolidin-3-yl]octyldimethylammonium iodide
- ee. [1-(4-aminophenyl)pyrrolidin-3-yl]decyldimethylammonium iodide
- ff. [1-(4-aminophenyl)pyrrolidin-3-yl]hexadecyldimethylammonium iodide
- gg. [1-(4-aminophenyl)pyrrolidin-3-yl]hydroxyethyldimethylammonium chloride
- hh. [1-(4-aminophenyl)pyrrolidin-3-yl]hydroxyethyldimethylammonium iodide.

69. (Currently amended) The composition of claim [[1]] 46, wherein the cationic tertiary para-phenylene is chosen from the group consisting of

- a. [1-(4-Aminophenyl)pyrrolidin-3-yl]trimethylammonium chloride
- b. [1-(4-Aminophenyl)pyrrolidin-3-yl]dimethyltetradecylammonium bromide

- c. N'-[1-(4-Aminophenyl)pyrrolidin-3-yl]-N,N-dimethylguanidinium chloride
- d. N-[1-(4-Aminophenyl)pyrrolidin-3-yl]guanidinium chloride
- e. 3-[1-(4-Aminophenyl)pyrrolidin-3-yl]-1-methyl-3H-imidazol-1-i um chloride
- f. [1-(4-Aminophenyl)pyrrolidin-3-yl]-(2-hydroxyethyl)dimethylammonium chloride
- g. [1-(4-Aminophenyl)pyrrolidin-3-yl]dimethyl-(3-trimethylsilylpropyl)ammonium chloride
- h. [1-(4-Aminophenyl)pyrrolidin-3-yl]-(trimethylammonium-hexyl)dimethylammonium dichloride
- i. 1'-(4-Aminophenyl)-1-methyl-[1,3']bipyrrolidinyl-1-i um chloride
- j. 3-[1-(4-Aminophenyl)pyrrolidin-3-yl]-1-(3-trimethylsilylpropyl)-3H-imidazol-1-i um chloride
- k. 3-[1-(4-Amino-3-methylphenyl)pyrrolidin-3-yl]-1-(3-trimethylsilylpropyl)-3H-imidazol-1-i um chloride
- l. [1-(4-aminophenyl)pyrrolidin-3-yl]ethyldimethylammonium chloride
- m. [1-(4-aminophenyl)pyrrolidin-3-yl]ethyldimethylammonium iodide
- n. [1-(4-aminophenyl)pyrrolidin-3-yl]propyldimethylammonium iodide,
- o. [1-(4-aminophenyl)pyrrolidin-3-yl]propyldimethylammonium bromide
- p. [1-(4-aminophenyl)pyrrolidin-3-yl]propyldimethylammonium methosulphate
- q. [1-(4-aminophenyl)pyrrolidin-3-yl]butyldimethylammonium iodide
- r. [1-(4-aminophenyl)pyrrolidin-3-yl]pentyldimethylammonium iodide
- s. [1-(4-aminophenyl)pyrrolidin-3-yl]hexyldimethylammonium iodide
- t. [1-(4-aminophenyl)pyrrolidin-3-yl]heptyldimethylammonium iodide
- u. [1-(4-aminophenyl)pyrrolidin-3-yl]octyldimethylammonium iodide
- v. [1-(4-aminophenyl)pyrrolidin-3-yl]decyldimethylammonium iodide
- w. [1-(4-aminophenyl)pyrrolidin-3-yl]hexadecyldimethylammonium iodide
- x. [1-(4-aminophenyl)pyrrolidin-3-yl]hydroxyethyldimethylammonium chloride
- y. [1-(4-aminophenyl)pyrrolidin-3-yl]hydroxyethyldimethylammonium iodide.

70. (Currently amended) The composition of claim [[1]] 46, wherein the cationic tertiary para-phenylene is chosen from the group consisting of

- a. [1-(4-Aminophenyl)pyrrolidin-3-yl]trimethylammonium chloride
- b. 3-[1-(4-Aminophenyl)pyrrolidin-3-yl]-1-methyl-3H-imidazol-1-i^um chloride
- c. [1-(4-Aminophenyl)pyrrolidin-3-yl]-(2-hydroxyethyl)dimethylammonium chloride
- d. 1'-(4-Aminophenyl)-1-methyl-[1,3']bipyrrolidinyl-1-i^um chloride.

71. (Currently amended) The composition of claim [[1]] 46, wherein the cationic tertiary para-phenylene is chosen from the group consisting of [1-(4-Aminophenyl)pyrrolidin-3-yl]trimethylammonium chloride, and [1-(4-Aminophenyl)pyrrolidin-3-yl]-(2-hydroxyethyl)dimethylammonium chloride.

72. (Currently amended) The composition of claim [[1]] 46, wherein the pearlescent or opacifying agent is an uncoated titanium oxide in powdered form.

73. (Currently amended) The composition of claim [[27]] 72, wherein the pearlescent or opacifying agent is an uncoated titanium oxide in the form of an aqueous dispersion of at least 10% ~~,20 or 30%~~ by weight of titanium oxide relative to the total weight of the aqueous dispersion and having a particle size equal to 15[[, 20 or]] to 60 nanometers.

74. (Currently amended) The composition of claim [[1]] 46, wherein the pearlescent or opacifying agent is a titanium oxide coated with a material chosen from polydimethylsiloxane, polymethylhydrogenosiloxane, perfluoropolymethyl isopropyl ether, silica, teflon, polyester, chitosan, N-lauryl-L-lysine.

75. (Currently amended) The composition of claim [[1]] 46, wherein the titanium oxide has a particle size of between 2 and 500 nanometers.

76. (Currently amended) The composition of claim [[29]] 75, wherein the titanium oxide has a particle size of between 2 and 300 nanometers.

77. (Currently amended) The composition of claim [[30]] 76, wherein the titanium oxide has a particle size of between 2 and 50 nanometers.

78. (Currently amended) The composition of claim [[1]] 46, wherein the cationic tertiary para-phenylenediamine(s) having a pyrrolidine ring represent from 0.001 to 10% by weight relative to the total weight of the composition.

79. (Currently amended) The composition of claim [[32]] 78, wherein the cationic tertiary para-phenylenediamine(s) having a pyrrolidine ring represent from 0.005 to 6% by weight relative to the total weight of the composition.

80. (Currently amended) The composition of claim [[1]] 46, wherein the pearlescent or opacifying agent or agents represent from 0.05% to 2% by weight relative to the total weight of the composition.

81. (Currently amended) The composition of claim [[34]] 80, wherein the pearlescent or opacifying agent or agents represent from 0.1% to 1% by weight relative to the total weight of the composition.

82. (Currently amended) The composition of claim [[1]] 46, further comprising at least one cationic polymer.

83. (Currently amended) The composition of claim [[1]] 46, further comprising at least one thickening polymer.

84. (Currently amended) The composition of claim [[1]] 46, further comprising at least one surfactant chosen from the group consisting of anionic surfactants, amphoteric or zwitterionic surfactants, nonionic surfactants and cationic surfactants.

85. (Currently amended) The composition of claim [[1]] 46, comprising at least one additional oxidation base other than cationic tertiary para-phenylenediamines having a pyrrolidine ring chosen from para-phenylenediamines, bis-phenylalkylenediamines, para-aminophenols, ortho-aminophenols, heterocyclic bases and their addition salts.

86. (Currently amended) The composition of claim [[36]] 85, wherein the additional oxidation base(s) are present in a quantity of between 0.001 to 20% by weight relative to the total weight of the composition.

87. (Currently amended) The composition of claim [[37]] 86, wherein the additional oxidation base(s) are present in a quantity of between 0.005 and 6% by weight relative to the total weight of the composition.

88. (Currently amended) The composition of claim [[1]] 46, further comprising at least one coupler chosen from meta-phenylenediamines, meta-aminophenols, meta-diphenols, naphthalene couplers, heterocyclic couplers and their addition salts.

89. (Currently amended) The composition of claim [[42]] 88, wherein the coupler is chosen from 1,3-dihydroxybenzene, 1,3-dihydroxy-2-methylbenzene, 4-chloro-1,3-dihydroxybenzene, 2,4-diamino-1-(β -hydroxyethoxy)benzene, 2-amino-4-(β -hydroxyethylamino)-1-methoxybenzene, 1,3-diaminobenzene, 1,3-bis(2,4-diaminophenoxy)propane, 3-ureidoaniline, 3-ureido-1-dimethylaminobenzene, sesamol, 1- β -hydroxyethylamino-3,4-methylenedioxybenzene, α -naphthol, 2-methyl-1-naphthol, 6-hydroxyindole, 4-hydroxyindole, 4-hydroxy-N-methylindole, 2-amino-3-hydroxypyridine, 6-hydroxybenzomorpholine, 3,5-diamino-2,6-dimethoxypyridine, 1-N-(β -hydroxyethyl)amino-3,4-methylenedioxybenzene, 2,6-bis(β -hydroxyethylamino)toluene and their addition salts.

90. (Currently amended) The composition of claim [[42]] 89, wherein the coupler(s) are present in a quantity of between 0.001 and 20%, ~~preferably between 0.005 and 6%~~ by weight relative to the total weight of the composition.

91. (Currently amended) The composition of claim [[42]] 90, wherein the coupler(s) are present in a quantity of between 0.005 and 6% by weight relative to the total weight of the composition.

92. (Currently amended) The composition of claim [[1]] 46, further comprising at least one direct dye.

93. (Currently amended) The composition of claim [[1]] 46, further comprising at least one hydroxylated solvent such as ethanol, propylene glycol, glycerol, polyol monoethers.

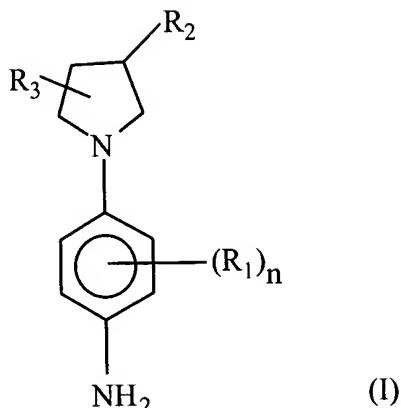
94. (Currently amended) The composition of claim [[1]] 46, further comprising an oxidizing agent chosen from hydrogen peroxide, urea peroxide, alkali metal bromates, persalts, peracids and oxidase enzymes.

95. (Currently amended) The composition of claim [[48]] 94, wherein the oxidizing agent is hydrogen peroxide.

96. (Previously presented) A method for the oxidation dyeing of keratinous fibres, wherein a dyeing composition comprising, in an appropriate dyeing medium, at least one cationic tertiary para-phenylenediamine containing a pyrrolidine ring, and at least one pearlescent or opacyfying agent chosen from coated or uncoated titanium oxides, mica-titaniums and micas, is applied to the fibres in the presence of an oxidizing agent.

97. (Previously presented) A multicompartiment device wherein the first compartment contains a dyeing composition comprising, in an appropriate dyeing medium, at least one cationic tertiary para-phenylenediamine containing a pyrrolidine ring, and at least one pearlescent or opacyfying agent chosen from coated or uncoated titanium oxides, mica-titaniums and micas, and a second compartment contains an oxidizing agent.

98. (New) A dyeing composition comprising, in an appropriate dyeing medium, at least one cationic tertiary para-phenylenediamine containing a pyrrolidine ring, and at least one pearlescent or opacyfying agent chosen from coated or uncoated titanium oxides, mica-titaniums and micas, wherein said cationic tertiary paraphenylenediamine containing a pyrrolidine ring corresponds to formula I:



in which

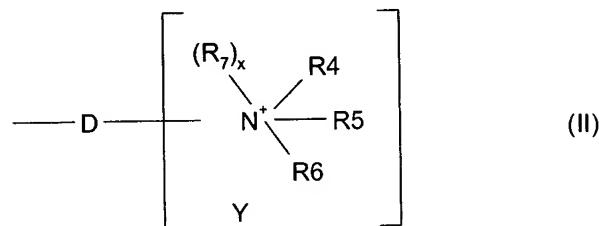
n varies from 0 to 4, it being understood that when n is greater than or equal to 2,

then the radicals R₁ may be identical or different,

R₁ represents a halogen atom; a saturated or unsaturated, aliphatic or alicyclic, C₁-C₆ hydrocarbon chain, it being possible for the chain to contain one or more oxygen, nitrogen, silicon or sulphur atoms or an SO₂ group, and it being possible for the chain to be substituted with one or more hydroxyl or amino radicals; an onium radical Z, the radical R₁ not containing a peroxide bond, or diazo, nitro or nitroso radicals,

R₃ represents a hydrogen atom or a hydroxyl radical;

R₂ represents an onium radical Z selected from formula (II), formula (III) or formula (IV), wherein formula (II) corresponds to:



in which

D is a single bond of a linear or branched C₁-C₁₄ alkylene chain which may contain one or more heteroatoms chosen from oxygen, sulphur or nitrogen, and

which may be substituted with one or more hydroxyl, C₁-C₆ alkoxy or amino radicals and which may carry one or more ketone functional groups;

R₄, R₅ and R₆, taken separately, represent a C₁-C₁₅ alkyl radical; a C₁-C₆ monohydroxyalkyl radical; a C₂-C₆ polyhydroxyalkyl radical; a (C₁-C₆)alkoxy(C₁-C₆)alkyl radical; an aryl radical; a benzyl radical; a C₁-C₆ amidoalkyl radical; a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical; a C₁-C₆ aminoalkyl radical; a C₁-C₆ aminoalkyl radical in which the amine is mono- or di-substituted with a C₁-C₄ alkyl, (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical; or

R₄, R₅ and R₆ together, in pairs, form, with the nitrogen atom to which they are attached, a 4-, 5-, 6- or 7-membered saturated carbon ring which may contain one or more heteroatoms, it being possible for the cationic ring to be substituted with a halogen atom, a hydroxyl radical, a C₁-C₆ alkyl radical, a C₁-C₆ monohydroxyalkyl radical, a C₂-C₆ polyhydroxyalkyl radical, a C₁-C₆ alkoxy radical, a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical, an amido radical, a carboxyl radical, a (C₁-C₆)alkylcarbonyl radical, a thio (-SH) radical, a C₁-C₆ thioalkyl (-R-SH) radical, a (C₁-C₆)alkylthio radical, an amino radical, an amino radical which is mono- or di-substituted with a (C₁-C₆)alkyl, (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical;

R₇ represents a C₁-C₆ alkyl radical; a C₁-C₆ monohydroxyalkyl radical; a C₂-C₆ polyhydroxyalkyl radical; an aryl radical; a benzyl radical; a C₁-C₆ aminoalkyl radical; a C₁-C₆ aminoalkyl radical whose amine is mono- or di-substituted with a (C₁-C₆)alkyl, (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical; a C₁-C₆ carboxyalkyl radical; a C₁-C₆ carbamyl-alkyl radical; a C₁-C₆ trifluoroalkyl radical; a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical; a C₁-C₆ sulphonamidoalkyl radical; a (C₁-C₆)alkylcarboxy(C₁-C₆)alkyl radical; a (C₁-C₆)alkylsulphanyl(C₁-C₆)alkyl radical; a (C₁-C₆)alkyl-sulphonyl(C₁-C₆)alkyl radical; a (C₁-C₆)alkylcarbonyl(C₁-C₆)alkyl radical; an N-(C₁-C₆)alkylcarbamyl(C₁-C₆)alkyl radical; an N-(C₁-C₆)alkyl-sulphonamido(C₁-C₆)alkyl radical;

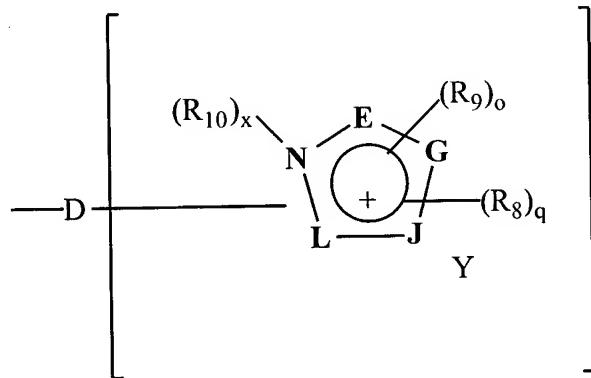
x is 0 or 1,

when $x = 0$, then the linking arm is attached to the nitrogen atom carrying the radicals R_4 to R_6 , with the proviso that when the linking arm D is a covalent bond then R_4 is chosen from or an aryl radical; a benzyl radical; a C_1-C_6 amidoalkyl radical; a tri(C_1-C_6)alkylsilane(C_1-C_6)alkyl radical; a C_1-C_6 aminoalkyl radical; a C_1-C_6 aminoalkyl radical in which the amine is mono- or di-substituted with a C_1-C_4 alkyl, (C_1-C_6)alkylcarbonyl, amido or (C_1-C_6)alkylsulphonyl radical; or;

when $x = 1$, then two of the radicals R_4 to R_6 form, together with the nitrogen atom to which they are attached, a 4-, 5-, 6- or 7-membered saturated ring and D is linked to the carbon atom of the saturated ring;

Y is a counter-ion;

and formula (III) corresponds to:



(III)

in which

D is a single bond or a linear or branched C_1-C_{14} alkylene chain which may contain one or more heteroatoms chosen from oxygen, sulphur or nitrogen, and which may be substituted with one or more hydroxyl, C_1-C_6 alkoxy or amino radicals, and which may carry one or more ketone functional groups;

the vertices E, G, J, L, which are identical or different, represent a carbon, oxygen, sulphur or nitrogen atom to form a pyrrole, pyrazole, imidazole, triazole, oxazole, isooxazole, thiazole, isothiazole ring,

q is an integer between 0 and 4 inclusive;

o is an integer between 0 and 3 inclusive;

q+o is an integer between 0 and 4;

the radicals R₈, which are identical or different, represent a halogen atom, a hydroxyl radical, a C₁-C₆ alkyl radical, a C₁-C₆ monohydroxyalkyl radical, a C₂-C₆ polyhydroxyalkyl radical, a C₁-C₆ alkoxy radical, a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical, an amido radical, a carboxyl radical, a C₁-C₆ alkylcarbonyl radical, a thio radical, a C₁-C₆ thioalkyl radical, a (C₁-C₆)alkylthio radical, an amino radical, an amino radical which is mono- or di-substituted with a (C₁-C₆)alkyl, (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical; a C₁-C₆ monohydroxyalkyl radical or a C₂-C₆ polyhydroxyalkyl radical; it being understood that the radicals R₈ are carried by a carbon atom,

the radicals R₉, which are identical or different, represent a C₁-C₆ alkyl radical, a C₁-C₆ monohydroxyalkyl radical, a C₂-C₆ polyhydroxyalkyl radical, a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical, a (C₁-C₆)alkoxy(C₁-C₆)alkyl radical, a C₁-C₆ carbamylalkyl radical, a (C₁-C₆)alkylcarboxy(C₁-C₆)alkyl radical, a benzyl radical; it being understood that the radicals R₉ are carried by a nitrogen,

R₁₀ represents a C₁-C₆ alkyl radical; a C₁-C₆ monohydroxyalkyl radical; a C₂-C₆ polyhydroxyalkyl radical; an aryl radical; a benzyl radical; a C₁-C₆ aminoalkyl radical, a C₁-C₆ aminoalkyl radical whose amine is substituted with a (C₁-C₆)alkyl, (C₁-C₆)alkylcarbonyl, amido or (C₁-C₆)alkylsulphonyl radical; a C₁-C₆ carboxyalkyl radical; a C₁-C₆ carbamylalkyl radical; a C₁-C₆ trifluoroalkyl radical; a tri(C₁-C₆)alkylsilane(C₁-C₆)alkyl radical; a C₁-C₆ sulphonamidoalkyl radical; a (C₁-C₆)alkylcarboxy(C₁-C₆)alkyl radical; a (C₁-C₆)alkylsulphiny(C₁-C₆)alkyl radical; a (C₁-C₆)alkylsulphonyl(C₁-C₆)alkyl radical; a (C₁-C₆)alkylcarbonyl(C₁-C₆)alkyl radical; an N-(C₁-C₆)alkylcarbamyl(C₁-C₆)alkyl radical; an N-(C₁-C₆)alkylsulphonamido(C₁-C₆)alkyl radical;

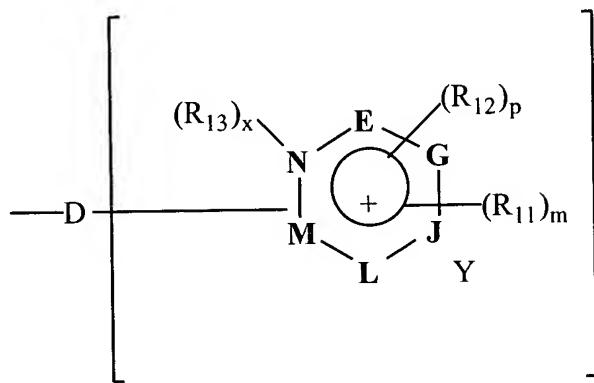
x is 0 or 1

when x = 0, the linking arm D is attached to the nitrogen atom,

when x = 1, the linking arm D is attached to one of the vertices E, G, J or L,

Y is a counter-ion;

and formula (IV) corresponds to:



(IV)

in which:

D is a single bond or a linear or branched C₁-C₁₄ alkylene chain which may contain one or more heteroatoms chosen from an oxygen, sulphur or nitrogen atom, and which may be substituted with one or more hydroxyl, C₁-C₆ alkoxy or amino radicals, and which may carry one or more ketone functional groups; the vertices E, G, J, L and M, which are identical or different, represent a carbon, oxygen, sulphur or nitrogen atom to form a ring chosen from the pyridine, pyrimidine, pyrazine, triazine and pyridazine rings;

p is an integer between 0 and 3 inclusive;

m is an integer between 0 and 5 inclusive;

p+m is an integer between 0 and 5;

the radicals R₁₁, which are identical or different, represent a halogen atom, a hydroxyl radical, a C₁-C₆ alkyl radical, a C₁-C₆ monohydroxyalkyl radical, a C₂-C₆ polyhydroxyalkyl radical, a C₁-C₆ alkoxy radical, a tri(C₁-

C_6)alkylsilane(C_1 - C_6)alkyl radical, an amido radical, a carboxyl radical, a C_1 - C_6 alkylcarbonyl radical, a thio radical, a C_1 - C_6 thioalkyl radical, a (C_1 - C_6)alkylthio radical, an amino radical, an amino radical which is substituted with a (C_1 - C_6)alkyl, (C_1 - C_6)alkylcarbonyl, amido or (C_1 - C_6)alkylsulphonyl radical; a C_1 - C_6 monohydroxyalkyl radical or a C_2 - C_6 polyhydroxyalkyl radical; it being understood that the radicals R_{11} are carried by a carbon atom, the radicals R_{12} , which are identical or different, represent a C_1 - C_6 alkyl radical, a C_1 - C_6 monohydroxyalkyl radical, a C_2 - C_6 polyhydroxyalkyl radical, a tri(C_1 - C_6)alkylsilane(C_1 - C_6)alkyl radical, a (C_1 - C_6)alkoxy(C_1 - C_6)alkyl radical, a C_1 - C_6 carbamylalkyl radical, a (C_1 - C_6)alkylcarboxy(C_1 - C_6)alkyl radical, a benzyl radical; it being understood that the radicals R_{12} are carried by a nitrogen, R_{13} represents a C_1 - C_6 alkyl radical; a C_1 - C_6 monohydroxyalkyl radical; a C_2 - C_6 polyhydroxyalkyl radical; an aryl radical; a benzyl radical; a C_1 - C_6 aminoalkyl radical, a C_1 - C_6 aminoalkyl radical whose amine is mono- or di-substituted with a (C_1 - C_6)alkyl, (C_1 - C_6)alkylcarbonyl, amido or (C_1 - C_6)alkylsulphonyl radical; a C_1 - C_6 carboxyalkyl radical; a C_1 - C_6 carbamylalkyl radical; a C_1 - C_6 trifluoroalkyl radical; a tri(C_1 - C_6)alkylsilane(C_1 - C_6)alkyl radical; a C_1 - C_6 sulphonamidoalkyl radical; a (C_1 - C_6)alkylcarboxy(C_1 - C_6)alkyl radical; a (C_1 - C_6)alkylsulphanyl(C_1 - C_6)alkyl radical; a (C_1 - C_6)alkylsulphonyl(C_1 - C_6)alkyl radical; a (C_1 - C_6)alkylcarbonyl(C_1 - C_6)alkyl radical; an N-(C_1 - C_6)alkylcarbamyl(C_1 - C_6)alkyl radical; an N-(C_1 - C_6)alkylsulphonamido(C_1 - C_6)alkyl radical;

x is 0 or 1

when $x = 0$, the linking arm D is attached to the nitrogen atom,

when $x = 1$, the linking arm D is attached to one of the vertices E, G, J, L or M,

Y is a counter-ion.